Token Ring-in-Fast Ethernet Server Network Interface Card User Guide

http://www.3com.com/

Part No. 09-1128-000
Published February 1998

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To ensure the very best 3Com service and support, take the time to complete the product registration card.

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About This Guide

This guide contains installation procedures and technical information about the 3Com® Token Ring-in-Fast Ethernet Server network interface card (3C395 NIC).

This guide is for those who install the card as part of a 3Com Token Ring-in-Fast Ethernet (TR-in-FE) network configuration.

It is assumed that users are familiar with NICs and with Ethernet, Fast Ethernet, and token ring network operations.

If the information in the release notes shipped with the product differs from the information in this guide, follow the information in the release notes.

Conventions

Table 1 and Table 2 list conventions that are used throughout this guide.

Table 1 Notice Icons

Icon	Notice Type	Description
	Information note	Important features or instructions
	Caution	Information to alert you to potential damage to a program, system, or device
	Warning	Information to alert you to potential personal injury

Table 2 Text Conventions

Convention	Description
`Screen displays`	This typeface represents information as it appears on the screen.
The words "enter" and "type"	When you see the word "enter" in this guide, you must type something, and then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says "type."
Keyboard key names	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). For example: Press Ctrl+Alt+Del.
Menu commands and *buttons*	Menu commands or button names appear in italics. Example: From the *Help* menu, select *Contents*.
Words in *italicized* type	Italics emphasize a point or denote new terms at the place where they are defined in the text.
Words in **bold-face** type	Bold text denotes key features.

Related Documentation

The following document contains information about installing and using a TR-in-FE network configuration:

SuperStack II Switch 2000 TR Token Ring-in-Fast Ethernet Module (part number 99045)

1 INTRODUCTION

The 3Com® Token Ring-in-Fast Ethernet Server network interface card (3C395 NIC) allows a Fast Ethernet server to receive encapsulated token ring packets. The 3C395 NIC is part of a 3Com Token Ring-in-Fast Ethernet (TR-in-FE) system that allows both Ethernet and token ring clients to share Fast Ethernet servers without the use of bridging, routing, or proprietary code.

A basic TR-in-FE system, shown in Figure 1-1, gives token ring clients access to a 100 Mbps server. Such a system requires these components:

- Fast Ethernet switch (SuperStack® II Switch 3000)
- TR-in-FE server (a Fast Ethernet server with a 3C395 NIC)
- 3Com SuperStack II Switch 2000 TR with a 3Com SuperStack II Switch 2000 TR Token Ring-in-Fast Ethernet Module (TR-in-FE module)

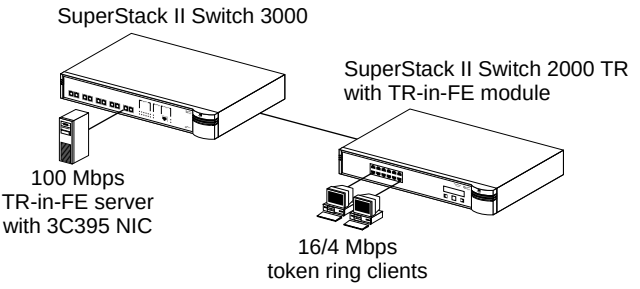


Figure 1-1 Basic TR-in-FE System

In a basic system, token ring clients connect to a SuperStack II Switch 2000 TR equipped with a TR-in-FE module. The TR-in-FE module encapsulates token ring packets within Fast Ethernet frames and allows interconnection to a Fast Ethernet switch connected to the TR-in-FE server. The 3C395 NIC allows the TR-in-FE server to receive the encapsulated token ring packets, thus providing access to the 100 Mbps server for token ring clients.

A larger-scale TR-in-FE configuration appears in Figure 1-2. Such a system allows both token ring and Ethernet devices to share the same Fast Ethernet physical wiring infrastructure and server base. Servers that are to be used for both token ring and Fast Ethernet clients must be equipped with both 3C395 and Fast Ethernet NICs.

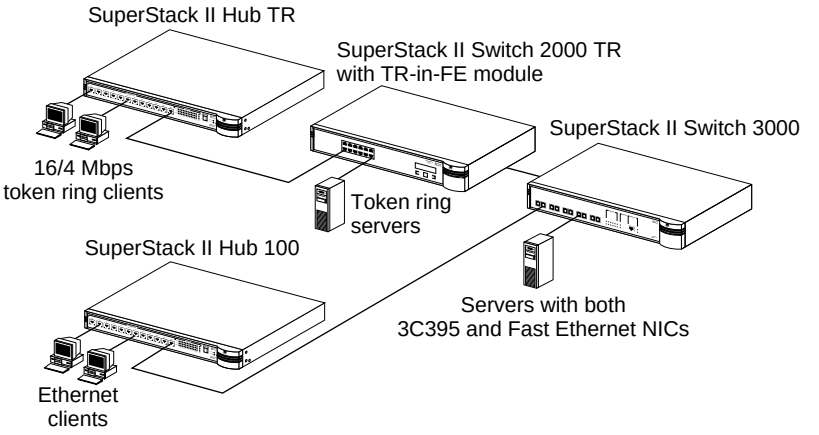


Figure 1-2 Larger-Scale TR-in-FE System

The 3C395 NIC is based on 3Com Fast Ethernet technology. The NIC has the following features:

- Parallel Tasking® architecture for high throughput and low processor utilization
- Support for full-duplex operation
- Support for PCI 2.0 or higher specifications
- 32-bit bus master design
- Status LEDs
- Single shielded RJ-45 connector
- Support for Category 5 unshielded twisted-pair (UTP) cabling for 100BASE-TX Fast Ethernet networks

2 HARDWARE INSTALLATION

The 3C395 NIC is only part of an entire TR-in-FE system. This guide only describes how to install the NIC in a Fast Ethernet server. For details on installing and setting up the TR-in-FE module, see the documentation for the TR-in-FE module: *SuperStack II Switch 2000 TR Token Ring-in-Fast Ethernet Module* (part number 99045).

Safety Precautions

Observe the following safety precautions.

WARNING: *Personal computers operate with voltages that can be lethal. Before removing the cover, turn off the computer and unplug it. Disconnect all cables that are connected to the main system unit. Remove jewelry from your hands and wrists. Use insulated or nonconductive tools.*

CAUTION: *The NIC is packed in an antistatic container to protect it during shipment. To avoid damaging the NIC or the PC, reduce static electricity on your body by wearing an electrostatic discharge wrist strap attached to the chassis or by touching an unpainted metal part of the chassis before handling the NIC.*

CAUTION: *Install the 3C395 NIC in a PCI slot that conforms to PCI 2.0 or higher specifications. Do not attempt to install the NIC in an ISA or EISA slot. Doing so may damage the NIC and the computer.*

Installation Requirements

Before you install the 3C395 NIC, the TR-in-FE module must be installed in the SuperStack II Switch 2000 TR and set up as described in the TR-in-FE documentation. Other installation requirements are summarized in Table 2-1.

Table 2-1 Installation Requirements

Processor	80486 or Pentium.
Server RAM	At least 640 KB.
PCI slot	One slot that conforms to PCI 32-bit specifications, revision 2.0 or higher.
Disk drive	High-density 3.5-inch floppy diskette.
Cable	UTP Category 5.
Connector	RJ-45.
Software	One 3Com software diskette containing TR-in-FE drivers.
Operating system	■ Novell NetWare version 3.12 with LANDR9.EXE and 312PTA.EXE upgrade patches for ODI 3.3. ■ Novell NetWare version 4.1x. ■ Microsoft Windows NT version 3.5.1. ■ Microsoft Windows NT version 4.0.
Server BIOS	Latest version. Contact the PC manufacturer to verify.

Installation Instructions

Be sure that the TR-in-FE module is installed and set up as described in the TR-in-FE documentation. Then follow these steps to install the 3C395 NIC:

1 **Unpack and inspect the NIC.**

Observe static electricity precautions. Verify that you have the following items:

- 3C395 NIC
- 3Com software diskette
- *Token Ring-in-Fast Ethernet Network Interface Card User Guide*

If you find a problem, contact the network supplier and the carrier that delivered the package. If you need to return a NIC to 3Com, pack it in the original (or equivalent) packing material to maintain the warranty.

Complete the Product Registration Card and return it to 3Com. Or call 1-800-NET-3Com for immediate registration.

2 Remove the computer cover.

If necessary, refer to the PC manufacturer's documentation for details on removing the computer cover.

3 Insert the 3C395 NIC in a PCI slot.

The PCI slot must conform to *PCI Local Bus Specification,* revision 2.0 or higher.

Select an available PCI slot and remove the expansion cover plate. (Keep the screw.) Insert the NIC securely in the PCI slot (*not* in an ISA or EISA slot). Replace the screw. See Figure 2-1.

If necessary, refer to the PC manufacturer's documentation for details on installing expansion boards.

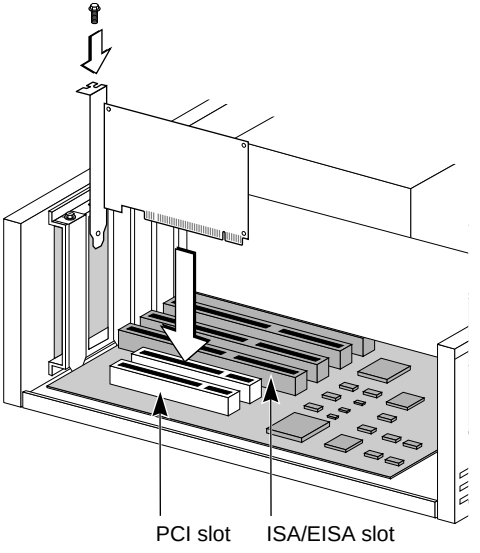


Figure 2-1 Inserting the NIC in a PCI Slot

4 Connect a Category 5 UTP network cable with an RJ-45 connector between the NIC and a Fast Ethernet hub or switch. See Figure 2-2.

For optimal performance, use a Fast Ethernet switch that supports frame sizes larger than 1500 bytes, such as the 3Com SuperStack II Switch 3000.

CAUTION: *Connect the cable only to the 3C395 NIC you just installed. Connecting the cable to other NICs could seriously damage the NIC and the network. Do not daisy-chain NICs or connect them back to back.*

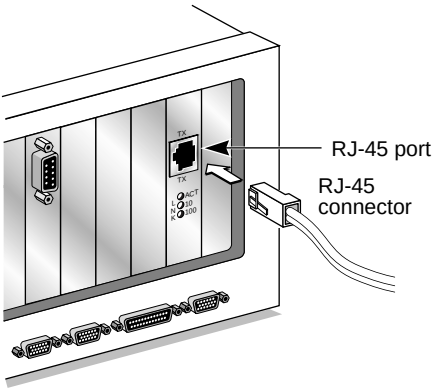


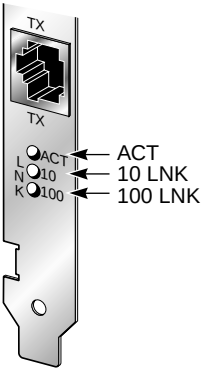
Figure 2-2 Connecting the Cable

5 Turn on the PC and check the NIC LEDs.

When the PC is turned on, the PC BIOS automatically configures the NIC's base I/O address (port address) and interrupt request (IRQ) line. You can only change these settings in the PC BIOS. However, you can set other parameters or run diagnostics with the Configuration and Diagnostic Program, which is provided on the 3Com diskette.

Check that the 100 LNK LED on the NIC is green, which indicates that the NIC is functioning properly. See Figure 2-3.

The NIC must be connected to the network before you can install drivers or run diagnostics.



ACT: Off until the network driver is installed;
after driver installation, yellow indicates port traffic

10 LNK: Green indicates 10 Mbps link integrity

100 LNK: Green indicates 100 Mbps link integrity

Figure 2-3 NIC LEDs at Power Up

Before You Install Software

Before you install a software driver, you may want to run the Configuration and Diagnostic Program, as described in Chapter 4.

See the instructions in Chapter 3 to install the driver from the 3Com diskette. For information on LED states after the software is installed, see Table 4-1 in Chapter 4.

Be sure that the NIC hardware and software are installed correctly before replacing the computer cover.

3 SOFTWARE INSTALLATION

This chapter describes how to install 3C395 NIC software drivers. The following drivers are supported:

- NetWare Server 3.12 or 4.1x
- Windows NT 3.51 or 4.0

The NIC must be connected to the network before you can install drivers.

Obtaining the Latest Drivers

You can obtain the latest drivers from 3Com's World Wide Web site. To access the site, set your Internet browser to the 3Com URL:

http://www.3com.com/

You can also obtain the latest drivers on the 3Com bulletin board (3ComBBS). For information on how to access 3ComBBS, see Appendix B.

Installing the NetWare Server Driver

If you already have a network connection on your PC, ask your network administrator how to proceed with the installation. For existing network connections, some of the following instructions may not apply or may produce different results.

Drivers and NetWare Loadable Modules (NLMs) for NetWare versions 3.12 and 4.1x are located in these directories on the 3Com diskette:

- NetWare 3.12: \NWSERVER\3.12
- NetWare 4.1x: \NWSERVER\4.1x

Use the most recent NLMs available. Compare the versions that accompanied your NetWare software with the NLM files on the 3Com diskette, and use the latest versions. For the latest NLMs, contact Novell.

You should know how to use the Novell installation program and have the network information, such as protocols, required for installation. If you need help with network information, see your system administrator.

The NetWare server software must be already installed but not yet running.

NetWare 3.12

Install the LANDR9.EXE and 312PTA.EXE patches from Novell. These patches upgrade the server to ODI 3.3 specifications. Then follow these steps to install the driver:

1. **Insert the 3Com diskette in the drive and copy all of the files from the \NWSERVER\3.12 directory on the diskette to the server hard disk.**
2. **At the DOS prompt, enter this command to start the server software:**

   ```
   server
   ```

3. **At the console prompt, enter:**

   ```
   load install
   ```

4. **Select the option to edit the AUTOEXEC.NCF file.**

   Add lines to the file to load the driver and bind a protocol. For example, if C:\SERVER is the directory where you copied files in step 1 and the protocol is IPX, add these lines:

   ```
   load c:\server\tif.lan
   bind ipx tif net = number
   ```

   where *number* is the unique IPX internal network number assigned to the network.

5. **Save the AUTOEXEC.NCF file.**
6. **Exit to DOS and restart the server.**

NetWare 4.1x

Follow these steps to install the driver:

1. **At the DOS prompt, enter this command to start the server software:**

   ```
   server
   ```

2. **At the console prompt, enter:**

   ```
   load install
   ```

3 **At the following prompts, make these selections:**
   - Installation Options: *Driver Options*
   - Driver Options: *Configure Network Drivers*
   - Additional Driver Actions: *Select a Driver*

   The installation proceeds.

4 **At the *Select a Driver* menu, insert the 3Com diskette in the drive.**

5 **Press Insert to add a driver from the diskette.**

6 **Press F3 to change the path to the drive that contains the 3Com diskette.**

7 **At the DOS prompt, enter the path for the driver:**

   `nwserver\4.1x`

   The installation proceeds.

8 **At the prompt for NIC selection, select *3Com Token Ring-in-Fast Ethernet Driver.***

   As the installation continues, provide network information when prompted.

9 **When the installation is finished, exit to DOS and restart the server.**

Installing the Windows NT Driver

Follow the instructions for Windows NT 3.51 or for Windows NT 4.0.

Windows NT 3.51

Follow these steps to install the driver:

1 **Start Windows NT and log on.**

2 **In the Control Panel, double-click *Network*.**

3 **In the Network Settings window, click *Add Adapter.***

4 **In the Add Network Adapter window, scroll to *(<other> Requires disk from manufacturer)* and click *Continue*.**

5 **Insert the 3Com diskette in the drive and make that the active drive.**

6 **In the Select OEM Option box, select *3Com TIF Server NIC (3C395) for NDIS 3* and click *OK*.**

If you are prompted for network information, contact your system administrator.

7 **In the Network Settings window, click *OK*.**

8 **In the Network Settings Change window, click *Restart Now*.**

Windows NT 4.0

Follow these steps to install the driver:

1 **Start Windows NT and log on.**

2 **In the Control Panel, double-click *Network*.**

3 **In the Network window, click *Adapters*.**

4 **In the Adapters tab, click *Add*.**

5 **In the Select Network Adapters window, click *Have Disk*.**

6 **Insert the 3Com diskette in the drive, make that the active drive, and click *OK*.**

7 **In the Select OEM Option box, select *3Com TIF Server NIC (3C395) for NDIS 4* and click *OK*.**

As the installation proceeds, provide network information when prompted. Contact your system administrator for this information.

8 **In the Network Adapters tab, click *Close*.**

Bindings messages appear.

9 **In the Network Settings Change window, click *Yes* to restart the computer.**

4 TROUBLESHOOTING

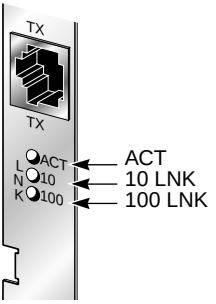
This chapter describes how to use the 3C395 NIC LEDs and diagnostic tests as troubleshooting aids. It also provides tips for troubleshooting.

LEDs

Before the LEDs can be used for troubleshooting, the NIC must be connected to the network (see Chapter 2) and the network driver must be installed (see Chapter 3).

Table 4-1 describes the 3C395 NIC LEDs.

Table 4-1 3C395 NIC LED Descriptions



LED	Color	Flashing	Steady	Off
ACT	Yellow: Port traffic for 10 or 100 Mbps	Network traffic present	Heavy network traffic	No traffic
10 LNK	Green: Link integrity	Not applicable	Good 10BASE-T connection between NIC and hub	No connection between NIC and hub
100 LNK	Green: Link integrity	Not applicable	Good 100BASE-TX connection between NIC and hub	No connection between NIC and hub

DOS Diagnostic Tests

You can run the Configuration and Diagnostic Program to perform DOS diagnostic tests after installing the 3C395 NIC or if you suspect a hardware failure.

Table 4-2 summarizes the DOS diagnostic tests.

Table 4-2 DOS Diagnostic Tests

Test	Description
Group 1	These tests check the following items: ■ Register Access ■ EEPROM ■ FIFO Loopback ■ Ethernet Core Loopback ■ Encoder/Decoder Loopback ■ Interrupt
Group 2	This test does not apply to the 3C395 NIC.
Group 3	The Echo Exchange Test tests the NIC's ability to transmit and receive data while on the network. To run this test, you need another PC to set up as an echo server that receives packets from the NIC being tested and echoes them back to the NIC.

If the NIC passes the Group 1 and Group 3 tests, hardware failure is ruled out. If a problem remains, look at cabling, software, and other issues that affect network functionality.

About the Configuration and Diagnostic Program

The Configuration and Diagnostic Program is a DOS application that must be run with no drivers or memory managers installed. You need to boot from DOS without running the AUTOEXEC.BAT or CONFIG.SYS files. The program does not run in Windows NT DOS windows.

Windows NT users need to boot the computer from a bootable DOS diskette before starting the Configuration and Diagnostic Program.

Table 4-3 summarizes how to select items and move through the Configuration and Diagnostic Program.

Table 4-3 Using the Configuration and Diagnostic Program

Task	Action
To select buttons	Press Tab and then press Enter.
To select other items	Use the arrow keys, and press Enter.
To escape a screen	Press Esc.
To get help	Select an item and press F1.

Running Group 1 Tests

Be sure that the NIC is installed correctly. Then follow these steps to run the Group 1 tests:

1 **Boot the PC under DOS.**

The Configuration and Diagnostic Program is a DOS application. It must be run in DOS, not in a DOS window. It will not run if memory managers or other device drivers have been loaded.

2 **Insert the 3Com diskette in the drive and make that the active drive.**

3 **Enter this command at the DOS prompt to start the Configuration and Diagnostic Program:**

```
3c395cfg
```

4 **From the *Test* menu, select *Run Tests*.**

The Run dialog box appears. The *Start* button is selected.

5 **To start the tests, press Enter.**

The test results are displayed on the screen in the Results column.

Group 1 tests run ten times unless you specify otherwise. To run the tests continuously:

a Go to the Repetitions box on the Test Setup screen.

b Select *Continuous.*

c Deselect *Halt on Error* in the Errors box.

For test descriptions, press F1 to see online Help.

6 **When you have finished testing the NIC, exit the Configuration and Diagnostic Program and reboot the PC.**

Running the Group 3 Test

The Group 3 test requires another PC set up as an echo server to receive packets from the NIC being tested and echo them back to the NIC. This echo server must have a 3C395 NIC running at 100 Mbps.

Before running the Group 3 test, connect to an inactive network on which only the PC being tested is operating.

CAUTION: *Running the Group 3 test while connected to an active network can cause intermittent failures.*

1. **Check that the NIC is installed and connected to the network correctly (see Chapter 2).**
2. **Boot the PC under DOS.**

   The Configuration and Diagnostic Program is a DOS application. It must be run in DOS, not in a DOS window. It will not run if memory managers or other device drivers have been loaded.
3. **Enter this command at the DOS prompt to start the Configuration and Diagnostic Program:**

   `3c395cfg`

   The program must be running on the PC that contains the NIC you want to test.
4. **To set up another PC as an echo server, select *Echo Server* under the *Test* menu and click *Start*.**
5. **From the *Test* menu, select *Test Setup*.**
6. **From the *Group Select* box, select *Group 3*.**
7. **Select *Enable Group* to enable the Group 3 test.**
8. **Select *OK*.**
9. **Go to the *Run* dialog box to start the test.**
10. **When the test is finished, end the program on the echo server PC.**
11. **On the PC with the NIC that you tested, exit the Configuration and Diagnostic Program and reboot the PC.**

Changing the Test Setup

You may want to change certain aspects of a test; for example, the number of times the test repeats or whether the test halts when it encounters an error. If you need to change the test setup, follow these steps:

1. **From the *Test* menu, select *Test Setup*. Or, in the Run Tests dialog box, select *Test Setup*.**
2. **Select any Test Setup dialog box field.**
3. **In the Group Select box, select a test group.**
4. **Change the test setup.**

   For example, if you select the Group 1 tests, you can make the following changes to the setup:

   - In the Group X Tests box, select a test. Press the spacebar to enable or disable an individual test.
   - In the Repetitions box, specify the number of times you want to run the tests, or select the *Continuous* option.
   - In the Errors box, press the spacebar to select or deselect the *Halt on Error* parameter.
5. **Select *OK*.**
6. **From the *Test* menu, select *Run Tests*. Select *Start* to run the tests.**

Getting Help If a Test Fails

If a test fails, the NIC may not be defective. The problem may be incorrect option settings, option settings that conflict with the settings of other boards, or improper installation.

If a DOS diagnostic test fails, you can get additional information as follows:

- From the Run Tests dialog box, select the test that failed, and press Enter.
- Select *Zoom* and press Enter.

Further Testing

If you need to test the NIC further, you can use the troubleshooting tips in Table 4-4. You can find the latest troubleshooting tips at the 3Com World Wide Web site on the Customer Support page. To access the site, set your Internet browser to the 3Com URL:

http://www.3com.com/

CAUTION: *Before inserting or removing the NIC from the PC, turn off the PC.*

Table 4-4 Troubleshooting Tips

Symptom	Tip
The Configuration and Diagnostic Program does not run.	Be sure that you booted the PC under DOS. No device drivers or memory managers can be loaded before you run the diagnostic tests.
The LNK LED does not light when you turn on the PC.	■ Check the NIC installation. Review Chapter 2. Make sure that the board is seated correctly in the slot. Check for specific hardware problems, such as broken traces or loose/broken solder connections. ■ Inspect all cables and connections. Check the length and rating of the UTP cable connection. Make sure that the cable segment complies with 100BASE-TX recommendations. Maximum cable length for this NIC is 100 meters. ■ Try inserting the NIC in another slot. The original slot may be defective. ■ Check the BIOS. Make sure that you are running the latest BIOS for your PC.

(continued)

Table 4-4 Troubleshooting Tips (continued)

Symptom	Tip
The NIC fails diagnostic tests.	■ If the NIC fails the Group 3 diagnostic test, be sure that the test is set up correctly, that the NIC is connected to an inactive, properly cabled network, and that an echo server is set up on the network. ■ Replace the failed NIC with a working NIC. Run the diagnostic tests again, using the same option settings as those used on the failed NIC. If the working NIC passes all tests, the original NIC is probably defective. For information on product repair, see Appendix B. ■ Install the NIC in another functioning PC. Run the tests again. The first PC you used for testing may be defective if the NIC passes the tests in this PC. ■ Remove all other NICs from the PC and run the tests again. If the tests pass, the other NICs may be causing contention. Check the configuration settings. Change the settings if they conflict with another device. See Chapter 5.

5 CONFIGURATION

This chapter describes configuration settings for the 3C395 NIC and how to change them using the Configuration and Diagnostic Program.

Table 5-1 summarizes the configuration settings.

Table 5-1 Configuration Settings

Option	Description	Default Setting	Available Settings
Network Driver Optimization*	Allows trade-offs between network performance and CPU utilization.	Normal	Minimize CPU Utilization, Maximize Network Performance, Normal.
Full-Duplex†	Controls whether the NIC runs in full-duplex or half-duplex mode.	Auto Select	Enabled (full-duplex mode), Disabled (half-duplex mode), Auto Select (automatic selection).
Boot PROM	Allows booting from a remote device.	Disabled	Disabled is the only available setting.
Media Type	Specifies the media type.	Auto Select	10BASE-T, 100BASE-TX, Auto Select (automatic selection).
I/O Port Address	Specifies the port address.	N/A	Not configurable.
Interrupt Level	Specifies the interrupt level (IRQ).	N/A	Not configurable.

* In multitasking environments, choosing the Minimize CPU setting saves CPU resources for other tasks. If no other applications are making major demands on CPU resources, choose the Maximize Network Performance setting.

† At 100 Mbps, setting the full-duplex option to Enabled improves the performance of switch or hub connections. The 3C395 NIC supports full-duplex mode at 10 or 100 Mbps. If a switch supports the NWay auto-negotiation feature and full-duplex operation, the NIC automatically runs in full-duplex mode.

CAUTION: *Before setting the NIC for full-duplex mode, make sure that the port to which the NIC is connected is also set to full-duplex mode.*

Changing Configuration Settings

You can use the Configuration and Diagnostic Program to change configuration settings.

Table 5-2 summarizes how to select items and move through the Configuration and Diagnostic Program.

Table 5-2 Using the Configuration and Diagnostic Program

Task	Action
To select buttons	Press Tab and then press Enter.
To select other items	Use the arrow keys, and press Enter.
To escape a screen	Press Esc.
To get help	Select an item and press F1.

Follow these steps to change configuration settings:

1 **Make sure that the NIC is installed and connected to the network, as described in Chapter 2.**

2 **Boot the PC under DOS.**

The Configuration and Diagnostic Program is a DOS application. It must be run in DOS, not in a DOS window. It will not run if memory managers or other device drivers have been loaded.

3 **Insert the 3Com diskette in the drive and make that the active drive.**

4 **Enter this command at the DOS prompt to start the Configuration and Diagnostic Program:**

```
3c395cfg
```

5 **From the *Install* menu, select a NIC as follows:**

- If one NIC is installed, select *Configure Adapter*.
- If more than one NIC is installed, select the NIC that you want to configure.

The parameters for the selected NIC are displayed.

6 **Select options and select settings.**

For information on how to select items and move through the program, see Table 5-2. To get Help on an option or a setting, select it and press F1.

7 To save settings, select *OK*.

You can save the configuration settings to a default file 3C395.SET in the CONFIG directory. Select *Save* under *File Options* in the Adapter Configuration dialog box and enter the location for the file. For example, if the CONFIG directory is on drive C, enter:

```
c:\config\3c395.set
```

8 When all changes are complete, exit the program.

Changing the Windows NT Registry

If the PC cannot run the Configuration and Diagnostic Program, you may need to set the NIC speed and duplex level in the Windows NT registry.

CAUTION: *Mistakes in the registry can cause system crashes. Be sure to save a copy of the original registry settings before you make changes, so that you can restore the registry if necessary. If you are not sure about the registry settings, consult with a knowledgeable network administrator before proceeding.*

You can set the NIC speed and duplex level in the registry by setting the MEDIA keyword in this subkey:

```
\\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services
\E190x?\MEDIA keyword
```

where *keyword* is one of the following:

100HALF	100 Mbps with half-duplex operation
100FULL	100 Mbps with full-duplex operation
AUTO	Driver performs auto configuration
NotPresent	Use settings on EEPROM

The default MEDIA keyword setting is NotPresent.

SPECIFICATIONS

This appendix lists the NIC specifications and RJ-45 connector pin assignments for the 3C395 NIC.

NIC Specifications

Network Interface

100BASE-TX Ethernet IEEE 802.3u industry standard for a 100 Mbps baseband CSMA/CD local area network.

Physical Dimensions

Height:	8.57 cm (3.75 in.)
Length:	12.07 cm (4.75 in.)

Environmental Operating Range

Operating temperature:	0˚ to 70 ˚C (32˚ to 158 ˚F)
Humidity:	10 to 90% noncondensing

Power Requirements

Operating voltage:	+5 V ± 5% @ 650 mA maximum

Cabling Requirements

100BASE-TX:	Two-pair Category 5 UTP for 100 Mbps cable
Maximum cable distance:	100 m (330.0 ft.)
Maximum network span:	205 m (672.4 ft.)

The cable, quality, distance, and connectors must comply with the EIA/TIA 568 *Commercial Building Wiring Standard* and the Technical Services Bulletin TSB38 standards.

RJ-45 Connector Pin Assignments

Figure A-1 shows the RJ-45 connector pin assignments.

The 3C395 NIC only uses connections 1, 2, 3, and 6. The bidirectional connections (4, 5, 7, and 8) are not used.

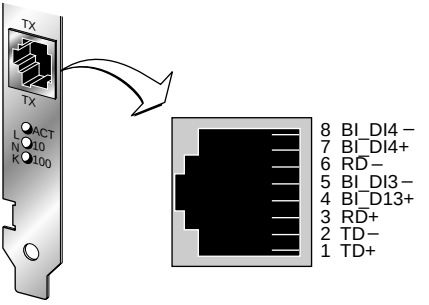
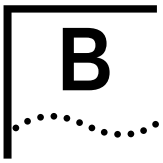


Figure A-1 3C395 NIC RJ-45 Connector Pin Assignments



TECHNICAL SUPPORT

3Com provides easy access to technical support information through a variety of services. This appendix describes these services.

Information contained in this appendix is correct at time of publication. For the very latest, we recommend that you access 3Com Corporation's World Wide Web site.

Online Technical Services

3Com offers worldwide product support 24 hours a day, 7 days a week, through the following online systems:

- World Wide Web site
- 3Com Bulletin Board Service (3ComBBS)
- 3ComFacts℠ automated fax service
- 3ComForum on CompuServe online service

World Wide Web Site

Access the latest networking information on 3Com Corporation's World Wide Web site by entering our URL into your Internet browser:

`http://www.3com.com/`

This service features the latest information about 3Com solutions and technologies, customer service and support, news about the company, *Net Age*® Magazine, technical documentation, and more.

3Com Bulletin Board Service

3ComBBS contains patches, software, and drivers for all 3Com products, as well as technical articles. This service is available through analog modem or digital modem (ISDN) 24 hours a day, 7 days a week.

Access by Analog Modem

To reach the service by modem, set your modem to 8 data bits, no parity, and 1 stop bit. Call the telephone number nearest you:

Country	Data Rate	Telephone Number
Australia	up to 14400 bps	61 2 9955 2073
Brazil	up to 14400 bps	55 11 5181 9666
France	up to 14400 bps	33 1 6986 6954
Germany	up to 28800 bps	4989 62732 188
Hong Kong	up to 14400 bps	852 2537 5601
Italy	up to 14400 bps	39 2 27300680
Japan	up to 14400 bps	81 3 3345 7266
Mexico	up to 28800 bps	52 5 520 7835
P.R. of China	up to 14400 bps	86 10 684 92351
Taiwan, R.O.C.	up to 14400 bps	886 2 377 5840
U.K.	up to 28800 bps	44 1442 438278
U.S.A.	up to 28800 bps	1 408 980 8204

Access by Digital Modem

ISDN users can dial in to 3ComBBS using a digital modem for fast access up to 56 Kbps. To access 3ComBBS using ISDN, use the following number:

1 408 654 2703

3ComFacts Automated Fax Service

3Com Corporation's interactive fax service, 3ComFacts, provides data sheets, technical articles, diagrams, and troubleshooting instructions on 3Com products 24 hours a day, 7 days a week.

Call 3ComFacts using your Touch-Tone telephone using one of these international access numbers:

Country	Telephone Number
U.K.	44 1442 438279
U.S.A.	1 408 727 7021

Local access numbers are available within the following countries:

Country	Telephone Number	Country	Telephone Number
Australia	1800 123 853	Netherlands	0800 0228049
Belgium	0800 71279	Norway	800 11062
Denmark	800 17319	Portugal	0505 442 607
Finland	98 001 4444	Russia (Moscow only)	956 0815
France	0800 908158	Spain	900 964 445
Germany	0130 81 80 63	Sweden	020 792954
Italy	1678 99085	U.K.	0800 626403

3ComForum on CompuServe Online Service

3ComForum contains patches, software, drivers, and technical articles about all 3Com products, as well as a messaging section for peer support. To use 3ComForum, you need a CompuServe account.

To use 3ComForum:

1. **Log on to your CompuServe account.**
2. **Type `go threecom`**
3. **Press [Return] to see the 3ComForum main menu.**

Support from Your Network Supplier

If additional assistance is required, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- A list of system hardware and software, including revision levels
- Diagnostic error messages
- Details about recent configuration changes, if applicable

If you are unable to contact your network supplier, see the following section on how to contact 3Com.

Support from 3Com

If you are unable to receive support from your network supplier, technical support contracts are available from 3Com.

Contact your local 3Com sales office to find your authorized service provider using one of these numbers:

Regional Sales Office	Telephone Number
3Com Corporation P.O. Box 58145 5400 Bayfront Plaza Santa Clara, California 95052-8145 U.S.A.	800 NET 3Com
3Com Asia Limited	
Australia	61 2 9937 5000 (Sydney) 61 3 9866 8022 (Melbourne)
Hong Kong	852 2501 1111
India	91 11 644 3974
Indonesia	62 21 572 2088
Japan	81 6 536 3303 (Osaka) 81 3 3345 7251 (Tokyo)
Korea	82 2 3455 6300
Malaysia	60 3 732 7910
New Zealand	64 9 366 9138
Philippines	632 892 4476
P.R. of China	8610 68492568 (Beijing) 86 21 63501581 (Shanghai)
Singapore	65 538 9368
Taiwan, R.O.C.	886 2 377 5850
Thailand	662 231 8151 5
3Com Austria	43 1 580 17 0
3Com Benelux B.V.	
Belgium	32 2 725 0202
Netherlands	31 0346 586211
3Com Canada	
Calgary	403 265 3266
Edmonton	403 423 3266
Montreal	514 683 3266
Ottawa	613 566 7055
Toronto	416 498 3266
Vancouver	604 434 3266
3Com France	33 1 69 86 68 00

(continued)

Regional Sales Office	Telephone Number
3Com GmbH	
Czech Republic/Slovak Republic	420 2 21845 800
Germany	49 30 34 98790 (Berlin)
(Central European HQ)	49 89 627320 (Munich)
Hungary	36 1 250 83 41
Poland	48 22 6451351
3Com Iberia	
Portugal	351 1 3404505
Spain	34 1 5096900
3Com Latin America	
U.S. Headquarters	408 326 2093
Northern Latin America	305 261 3266 (Miami, Florida)
Argentina	541 312 3266
Brazil	55 11 5181 0869
Chile	562 633 9242
Colombia	57 1 629 4847
Mexico	52 5 520 7841/7847
Peru	51 1 221 5399
Venezuela	58 2 953 8122
3Com Mediterraneo	
Italy	39 2 253011 (Milan) 39 6 5279941 (Rome)
3Com Middle East	971 4 349049
3Com Nordic AB	
Denmark	45 39 27 85 00
Finland	358 0 435 420 67
Norway	47 22 58 47 00
Sweden	46 8 632 56 00
3Com Russia	007 095 258 09 40
3Com Southern Africa	27 11 807 4397
3Com Switzerland	41 31 996 14 14
3Com Technologies	
Ireland	353 1 820 7077
3Com U.K. Ltd.	44 131 240 2900 (Edinburgh) 44 161 873 7717 (Manchester) 44 1628 897000 (Marlow)

Returning Products for Repair

Before you send a product directly to 3Com for repair, you must first obtain a Return Materials Authorization (RMA) number. Products sent to 3Com without RMA numbers will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, call or fax:

Country	Telephone Number	Fax Number
U.S.A. and Canada	1 800 876 3266, option 2	408 764 7120
Latin America	1 408 326 2927	408 764 7120
Europe, South Africa, and Middle East	44 1442 435860	44 1442 435822
Elsewhere	1 408 326 2926	1 408 764 7120

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3Com Corporation LIMITED WARRANTY

HARDWARE

3Com warrants its hardware products to be free from defects in workmanship and materials, under normal use and service, for the following lengths of time from the date of purchase from 3Com or its Authorized Reseller:

Network interface cards	Lifetime
Other hardware products (unless otherwise specified in the warranty statement above)	1 year
Spare parts and spares kits	90 days

If a product does not operate as warranted above during the applicable warranty period, 3Com shall, at its option and expense, repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. Any replaced or repaired product or part has a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

3Com shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to 3Com for repair, whether under warranty or not.

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3Com warrants that the software programs licensed from it will perform in substantial conformance to the program specifications therefor for a period of ninety (90) days from the date of purchase from 3Com or its Authorized Reseller. 3Com warrants the media containing software against failure during the warranty period. No updates are provided. The sole obligation of 3Com with respect to this express warranty shall be (at the discretion of 3Com) to refund the purchase price paid by Customer for any defective software products, or to replace any defective media with software which substantially conforms to applicable 3Com published specifications. Customer assumes responsibility for the selection of the appropriate applications program and associated reference materials. 3Com makes no warranty or representation that its software products will work in combination with any hardware or applications software products provided by third parties, that the operation of the software products will be uninterrupted or error-free, or that all defects in the software products will be corrected. For any third-party products listed in the 3Com software product documentation or specifications as being compatible, 3Com will make reasonable efforts to provide compatibility, except where the noncompatibility is caused by a "bug" or defect in the third party's product.

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This Limited Warranty shall be governed by the laws of the State of California, U.S.A., excluding its conflicts of laws principles and excluding the United Nations Convention on Contracts for the International Sale of Goods.

3Com Corporation, 5400 Bayfront Plaza, Santa Clara, CA 95052-8145 (408) 764-5000

FCC CLASS B STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

WARNING: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, and the Canadian Department of Communications Equipment Standards entitled, "Digital Apparatus," ICES-003.These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from the one which the receiver is connected to.
- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet prepared by the Federal Communications Commission helpful:

The Interference Handbook

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 004-000-00345-4.

NOTE: In order to maintain compliance with the limits of a Class B digital device, 3Com requires that you use quality interface cables when connecting to this device. Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment. Refer to the manual for specifications on cabling types.

FCC Declaration of Conformity

We declare under our sole responsibility that the

Model:	**Description:**
3C395	Token Ring-in-Fast Ethernet Server NIC

to which this declaration relates, is in conformity with the following standards or other normative documents:

- ANSI C63.4-1992 Methods of Measurement
- Federal Communications Commission 47 CFR Part 15, subpart B
  15.107 (e) Class B Conducted Limits
  15.109 (g) Class B Radiated Emissions Limits

3Com Corporation, 5400 Bayfront Plaza, P.O. Box 58145, Santa Clara, CA 95052-8145

3Com End User Software License Agreement

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